

Ranges and Specific Ionisation of Multi-Charged Ions in ^{Soviet} Gases Sov/56-34-2-5/55

for the transition from hydrogen into air the coefficient 0.29 ± 0.01 . The last paragraph gives a discussion of the results. The ranges of the ions in air, measured by means of a ionisation chamber are by about 1 mm shorter than the ranges measured by a counter. This can be explained qualitatively only by nuclear collisions. The slowing down power of the photoemulsion for the here examined ions in air resembles the slowing down power for α - particles. The results of the measuring of the specific losses in case of the ions ^{14}N agree with the data already known before within the experimental errors. But the here found data for the ions ^{80}Ne are by 30% higher than the values found before. This difference can hardly be explained by the influence of nuclear collisions.

There are 5 figures, 2 tables, and 26 references, 7 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)
SUBMITTED: September 20, 1957.

Card 3/3

BREDNEV, V. M.; NIKOLAYEV, V. S.

"Investigation into the characteristics of a vertical rotor apparatus."

report submitted for 2nd All-Union Conf on Heat & Mass Transfer, Minzg, 4-12
May 1954.

Kazan' Chemical Technological Inst.

83678

26.1420 (2117, 2217)

S/048/60/024/009/015/015
B003/B063

AUTHORS:

Dmitriev, I. S., Nikolayev, V. S., Pateyeva, L. N.,
Teplova, Ya. A.

TITLE:

The Amount of the Mean Charge of Ions Passing Through a
Substance

PERIODICAL:

Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960,
Vol. 24, No. 9, pp. 1169-1174

TEXT: The present paper describes an experimental study of the equilibrium charge distribution of ions of light elements ($2 \leq Z \leq 18$) and of Kr ions in helium, nitrogen, argon, krypton, and celluloid foil. Besides, the authors measured the charge exchange cross sections of these ions in gases. A 72-cm cyclotron (Ref. 3) served as the source of fast, multiply charged ions. The experimental arrangement is shown in Fig. 1. The equilibrium charge distribution of the ions with $Z \leq 10$ was measured in the velocity range of $(2.6 \pm 12) \cdot 10^8 \text{ cm sec}^{-1}$. In this velocity range and for the above-mentioned substances, the width of distribution σ is nearly equal for each ion. The dependence of the degree of ionization i/Z on the ion

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B079/B065

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Through a Substance

velocity differs in the various media (Fig. 2). The monotonous course of i/Z is a matter of fact within one period of Mendeleev's periodic table. As it seemed to be unjustified to extend this dependence to a wider range of variations of Z , the equilibrium charge distribution of the ions with $Z > 10$ in the above-mentioned substances was measured at velocities of $2.6 \cdot 10^8$ and $4.1 \cdot 10^8 \text{ cm sec}^{-1}$. It was found that at these ion velocities the mean charge i increases with increasing Z in all substances. The Z -dependence of the degree of ionization I/Z shows different characters in gases and solids. Fig. 3 shows the dependence of i/Z on Z in helium (I) and celluloid foil (II) for $v = 2.6 \cdot 10^8 \text{ cm sec}^{-1}$ (a) and $v = 4.1 \cdot 10^8 \text{ cm sec}^{-1}$ (b). Fig. 4 shows the dependence of i^2 on Z in nitrogen (1) and celluloid foil (2) for $v = 2.6 \cdot 10^8 \text{ cm sec}^{-1}$ (a) and $v = 4.1 \cdot 10^8 \text{ cm sec}^{-1}$ (b). Fig. 5 shows the dependence of ϕ_i on Z and Fig. 6 the dependence of the width of the equilibrium charge distribution $\delta = \sqrt{i^2 - i^2}$ on Z . The perturbation of the continuity of i and ϕ_i as a function of Z is due to the fact that

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the filling of the third electron shell begins in the range $Z = 11 - 13$.
The equilibrium charge distribution of the ion beam depends on the cross
sections of the electron loss (Q_n) and capture (Q_3). The measurement of
these cross sections shows that the dependence of Q_n and Q_3 on Z of the
ions does not take a monotonic course (Fig. 7). The results obtained prove
that it is necessary to take into account the effect of the periodic
structure of the electron shell of the ions upon the amounts of i and
 i^2 . There are 7 figures and 5 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki
Moskovskogo gos. universiteta im. M. V. Lomonosova
(Scientific Research Institute of Nuclear Physics of Moscow
State University imeni M. V. Lomonosov)

Card 3/3

81385

S/056/60/039/004/001/048
B004/B070~~24.2100 - 1043, 1482 only~~~~26.2310~~

AUTHORS:

Nikolayev, V. S., Dmitriyev, I. S., Pateyeva, L. N.,
Teplov, Ye. A.

TITLE:

Investigation of the Equilibrium Charge Distribution in a
Beam of Fast IonsPERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,
Vol. 39, No. 4(10), pp. 905-914

TEXT: This is in continuation of an earlier work of the authors (Ref. 1) in which they studied the equilibrium charge distribution in a beam of ions of light elements ($Z = 5$ to $Z = 10$) and found a monotone dependence of the average charge \bar{Z} on Z . The purpose of the present work was to study the function $\bar{Z} = f(Z)$ at the transition from one period of the periodic system to another. For this purpose, the equilibrium distribution of ions of He, Li, B, N, Ne, Na, Mg, Al, P, Ar, and Kr in helium, nitrogen, argon, krypton and in a celluloid film was measured. The measurements for He, B, N, and Ne were made in a larger range of

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Distribution in a Beam of Fast Ions

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B004/B070

velocities than in Ref. 1. For ions with $Z > 10$, the measurements were made only at $v = 2.6 \cdot 10^8$ cm/sec; for Na, P, and Ar the measurements were also made at $4.1 \cdot 10^8$ cm/sec. The multi-charge ions were accelerated in a 72-cm cyclotron. Ions of charges $i \pm 1$, $i \pm 2$, etc. were obtained from those of the initial charge i by passing them through a celluloid film of approximate thickness $2 \mu\text{g}/\text{cm}^2$. The data for the equilibrium distribution of ions with $Z \leq 10$ are given in Tables 1-3, and in Fig. 1. In all media, the distribution was nearly Gaussian.

$\Phi_i \approx (\sigma/\sqrt{2\pi}) \exp[-(i - \bar{I})^2/2\sigma^2]$. The curve is characterized by two parameters: the average charge $\bar{I} = \sum_i \Phi_i i$ and the width of the

distribution $\sigma = [\sum_i \Phi_i (i - \bar{I})^2]^{1/2}$. For He, Li, B, N, and Ne, σ was again found to increase monotonically with increasing Z . It was found to be different in the different media (Fig. 2). The following rule was found to hold for all ions: maximum value of \bar{I} in nitrogen and argon,

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Distribution in a Beam of Fast Ions

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B004/B070

observed in the range $Z \sim 10 - 12$ is explained as being due to the beginning of the filling of a new electron shell. There are 6 figures, 3 tables, and 18 references: 7 Soviet, 7 US, 2 British, and 2 Danish.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo
universiteta (Institute of Nuclear Physics of the Moscow
State University)

SUBMITTED: April 13, 1960

Card 4/4

NIKOLAEV, V.S.; DMITRIYEV, I.S.; FATEYEVA, L.N.; TEPLOVA, Ya.A.

Experimental study of electron capture by multiply charged ions.
Zhur. ekspr. i teor. fiz. 40 no.4:989-1000 an '61. (MIRA 16:7)

1. Institut yadernoy fiziki Mezhevskogo gosudarstvennogo universiteta.
(Electrons--Capture) (Ions) (Cyclotron)

NIKOLAEV, V.S.; FATEYEV, L.N.; DMITRIYEV, I.S.; TEPOVA, Ya.A.

Capture of several electrons by fast multicharge ions. Izmer.ekspl.
teor.fiz. 41 no.1:87-99 J1 '61. (MIRA 14:7)

1. Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.
(Electrons—Capture) (Ion beams)

Experimental study of electron...

33991
S/056/62/042/001/001/001
B125/31C8

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo
universiteta (Institute of Nuclear Physics of the Moscow State
University)

SUBMITTED: June 21, 1961

Card 4/4

33993

S/056/62/042/100* 10
B125/B100

24.6712

AUTHORS: Teplova, Ya. A., Nikolayev, V. S., Dmitriyev, I. N., Patryshev,
L. N.

TITLE: Slowing down of multiply charged ions in solid and gaseous media

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41,
no. 1, 1962, 44 - 60

TEXT: The ranges R, the specific energy losses dE/dx , and the straggling S of fast multiply charged ions of He, Li, Be, B, C, N, O, Ne, Na, Mg, Al, P, Cl, K, Br, and Kr ($2.6 \cdot 10^8$ - $11.8 \cdot 10^8$ cm/sec) with energies of 25 - ~700 kev/nucleon in hydrogen, helium, methane, benzene, air, argon, and various mixtures of these gases were measured. Moreover, the specific energy losses in celluloid, Al, Ni, Ag, and Au were measured for a wide range of Z and Z_c (Z = ion charge, Z_c = atomic number of the medium) by means of a multiwire proportionality counter. The ions were accelerated with a 72-cm cyclotron. The methods of measuring R and dE/dx have been

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33996/62/342/ A.1/ 01/046

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Slowing down of multiply charged...

presented before (Institutia AN SSSR, seriya fiz., 24, "14, 1974; 25, 5-6, 1975). Because of the small range and weak intensity of the ion beams of Be, C, Na, Mg, Cl, K, Br, and Kr, only their maximum ranges R_m were measured. The relation $R = kv$ holds with an accuracy of $\delta \sim 1\%$ for ions with $Z \geq 2$ up to a certain maximum velocity v_m ; k increases with Z as $\sim Z^{1/2}$. For ions of He to Ne v_m ranges from $5 \cdot 10^8$ to $8 \cdot 10^8$ cm/sec. In the velocity range investigated, R_m increases not monotonically on Z but fluctuates periodically by $\sim 30\%$. The fluctuation amplitude decreases with increasing velocity. The dependence $R(Z_c)$ of N ions is similar to that of protons. With decreasing velocity, the absolute value of straggling S , becomes smaller but the ratio still $\delta = S/R$ increases. At constant velocity, the functions $S(Z)$ and $\delta(Z)$ are nonmonotonic. The fluctuations of $R(Z)$ and $S(Z)$ are explained by a considerable effect of the electron structure (filling up of the L and M shells, etc.) of the ions. The law of additivity of dE/dx in mixtures is fulfilled for multiply charged ions as well as for protons and α -particles. In the qualitatively valid relation $dE/dx \approx v^m f(Z_c, Z)$, m is near unity at velocities below $8 \cdot 10^8$ cm/sec.

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3125/8100

Slowing down of multiply charged...
decreases with increasing velocity, and tends to -2 at $v \gg v_0$ cm/sec.
 $(dE/dx)_{\max} \sim Z^f(Z_c)$ holds for any ion group. According to T. I.
Tel'kovskiy et al. (DAN SSSR, 113, 1959, 1957), the experimental values
of dE/dx for protons in A_G are 50% higher than the theoretical values.
O. B. Firsov (ZhETF, 36, 1517, 1959) found that $-dE/dx = 2.34(Z+2)v^{-1.7}$
ev/cm²/atom. Because of the electron structure of the ions, which becomes
more and more distinct with increasing velocity ($v > v_0$), it is more
convenient to use the Hartree-Fock method instead of the Thomas-Fermi
model. At $v \gg u$ (u = velocity of orbital electrons of the helium), the
calculation of dE/dx for inelastic collisions of protons in hydrogen with
electrons from modified quantum-mechanical formulas of Bethe and Bloch,
and from the classical formula of Bohr at $v \sim 4 \cdot 10^8$ cm/sec yields a value
5 - 7% smaller than the experimental values. For multiply charged ions,
this applies to large v , but with increasing Z_c and decreasing v this
theory deviates more and more from the experiment. S. S. Vasil'yev is
thanked for interest, the cyclotron team, particularly A. A. Danilev,
Card 3/4 ✓

33993

Sloshing down of multiply charged...

J/566/62/042/001-001-00
3125/3108

M. Kh. Listov, and V. P. Kholapov for performing the experiments, and N. P. Firssov for discussions. There are 8 figures and 20 references. 8 Soviet and 10 non-Soviet. The four most recent references to English-language publications read as follows: P. G. Roll, F. S. Steigert, *Nucl. Phys.*, 17, 54, 1960; D. J. Porat, K. Razavataram, *Proc. Phys. Soc.*, 71, 37, 1954; J. E. Alexander, M. F. Gazdik, *Phys. Rev.*, 120, 874, 1960; P. G. Roll, F. S. Steigert, *Phys. Rev.*, 120, 470, 1960.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute of Nuclear Physics of Moscow State University) *X*

SUBMITTED: July 12, 1961

Cart 4/4

5/056/043/002/001/053
5102/B1v4

AUTHORS: Dmitriev, I. S., Nikolayev, V. A., Fateyeva, L. N., Teplov, Yu.

TITLE: Study of the loss of several electrons by fast multiply-charged ions

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 2(3), 1962, 361-369

TEXT: Many-electron loss cross sections for multiply-charged ions of light elements with $Z \geq 3$ were measured in He, N, Ar, and Kr. The velocity of the ions was $(2.6-12) \cdot 10^8$ cm/sec (35 - 750 kev per nucleon). The velocity of the sections were determined by mass spectrometry, using an apparatus described in ZhETF, 40, 989, 1961. Two-electron loss cross sections were determined for Li, B, C, N, O, Ne, Na, Mg, Al, P, and Ar, three-electron loss cross sections for N, Ne, Na, Mg, Al, P, and Ar, four-electron loss cross sections for N, Ne, P, and Ar, and five-electron cross sections for P and Ar. The first two had an error of 15-20%, and the last two had one of 30%. The

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5/056/043/002/001/053 CIA-RDP86-00513R001137120003-3

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5102/B1v4

Study of the loss of several electrons ... cross sections are denoted by $\sigma_{1,1+n}$, $n=2 \dots 5$. The electron loss cross section is proportional to the electron number q_i of the outer shell, so

that $\sigma_1 = (1/q_i) \sum_{s=1}^q s \sigma_{1,i+s}$ for the loss of one electron, $c_i^{(2)}$

$= c_i^{-2} \sum_{s=2}^q c_s^2 \sigma_{1,i+s}$ for the loss of an electron pair, where $c_s^2 = s(s-1)/2$.

c_s^2 and c_q^2 (analogously defined) are the numbers of pairs which can be formed from s and q electrons, respectively. Formulas are also given for the loss probability and the cross-section ratios. The results suggest that the loss of an electron is independent of the existence of the others in an ion-atom collision of the medium. The mean loss probability of individual electrons is small and depends on the binding energy of the electron in the ion. Electron losses occur chiefly if the collision parameters are of the order of the electron shell dimensions. The case under consideration (ion scattering angle $\theta \leq 0.005$ rad) corresponds to

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DMITRIIEV, I.S.; NIKOLAEV, V.S.; FATEYeva, L.N.; TEPOVA, Ya.A.

Study of the loss of several electrons by fast multiply charged
ions. Zhur. eksp. i teor. fiz. 43 no.2:361-369 Ag '62.

(MIRA 16:6)

1. Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.
(Ions) (Electrons)

L 181) 2-63

EWT(1)/EDS/ED(W)-2 AFPTO/ASD/IJP(C)/^{SCD} Part 4
ACCESSION NR: AP3004504 S/0043/63/027/008/1078/1080

63

AUTHOR: Nikolayev, V.S.; Dmitriev, I.S.; Teplova, Ya.A.; Fateyeva, L.N.

TITLE: Variation of the mean charge of fast ions as a function of the density of the medium /Report presented at the Second All-Union Conference on the Physics of Electronic and Atomic Collisions held in Uzhgorod 2-9 Oct 1962/

SOURCE: AN SSSR, Izvestiya, ser.fiz., v.27, no.8, 1963, 1078-1080

TOPIC TAGS: ion charge, electron loss, electron capture, ionization loss, N

ABSTRACT: The mean charge of uranium fission fragments, established incident to their passage through a gas, is known to increase with increasing gas density. According to H.Bohr and J.Lindhard (Kgl.danske ved.selskab.Mat.fys.medd.,28, No.7, 1934), this is due to increase in the probability for loss of electrons from the excited states with decrease of the interval between successive ion-atom encounters. In the present work increase of the mean ion charge incident to increase in gas density was observed in experiments with 4.9 MeV ($v = 8.2 \times 10^8$ cm/sec) triply charged nitrogen ions. The cyclotron accelerated ions entered a 10 cm diameter 4.8 meter long collision chamber. The particles traversing the chamber were analyzed by a magnet and detected by proportional counters. The relative numbers Φ_i

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ACCESSION NM: AP3004504

of ions with different charges were determined at nitrogen pressures from 4×10^{-5} to 5×10^{-2} mm Hg. The results are shown in the figure (see Enclosure). At pressures under 10^{-3} mm Hg the experimental values of Φ_1 and the mean charge \bar{I} virtually agree; above 10^{-3} mm Hg the charge distribution in the ion beam approaches an equilibrium value and the Φ_1 curves level off. Above $>10^{-2}$ mm Hg the mean charge begins to decrease with rising pressure owing to decrease in the ion velocity as a result of collision slowing down. Thus, gas at 10^{-2} mm Hg and up cannot be regarded as sufficiently rarified where passage of light element ions is concerned. This fact and the pressure variation of Φ_1 in the region of lower pressures should be taken into account in using experimental data on Φ_1 for determining electron loss cross sections on the basis of electron capture cross sections (and vice versa).
Orig.art.hms: 1 figure.

ASSOCIATION: none.

SUBMITTED: OO

DATE ACQ: 26Aug33

ENCL: 01

SUB CCDE: PH

NO REF Sov: 008

OTHER: 004

Card 2/3

AUTHORS: Nikolayev, V. S., Dmitriev, I. S., Patrova, L. N., and Teplova, Ia. A.
TITLE: Charge exchange of various ions in their interaction with residual gas
PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 11, 1962, 1450-1454
TEXT: The charge distribution in ion beams was measured after their passage through the experimental setup used for determining the cross sections of electron loss and capture by ions with $Z \leq 10$. The setup contains only the residual gas of $(1.2-1.5) \cdot 10^{-5}$ mm Hg. For ions with $Z \leq 10$ the measurements were made at energies of $35-350$ kev per nucleon and for phosphorus and argon ions at $v = 2.0 \cdot 10^8$ cm/sec. For ions with $Z \leq 10$ the measurements were made at energies of $35-350$ kev per nucleon and for phosphorus and argon ions at $v = 4.1 \cdot 10^8$ cm/sec. These ions (charge i) were accelerated in a 72-cm cyclotron and recorded in counters. This apparatus, then recorded in a system of eight proportional counters. This apparatus was evacuated by a system of eight diffusion pumps. The beam that had passed through the setup always contained ions with

S/056/65/044/002/040/065
B108/B166

AUTHORS: Dmitriyev, I. S., Nikolayev, V. S.

TITLE: Calculation of the cross-section of electron loss by fast ions in light media

PERIODICAL: 'Zhurnal eksperimental'noy i teoreticheskoy fiziki', v. 44, no. 2, 1963, 660-665

TEXT: The cross-section is calculated in free-collision approximation for hydrogen and helium media. Resonance effects are neglected owing to screening. The latter has a considerable effect on the cross-section and is taken into consideration here. The general expression for the cross section

$$\sigma = \pi a_e^2 (v_e/Z^* v)^2 (Z^* [G_{\gamma} (w/2Z^* v_0) - G_{\gamma} (v/Z^* v_0)] + Z [G_{e^+} (w/2Z^* v_0) - G_{e^+} (w/2Z^* v_0)]); \quad (2)$$

$$G_{\gamma} (x) = (1 + x^2)^{-1} + (1 + x^2)^{-2} + \frac{1}{3} (1 + x^2)^{-3}.$$

$$G_{e^+} (x) = 4 \ln (1 + x^{-2}) + 6 (1 + x^{-2})^{-1} + 2 (1 + x^{-2})^{-2} + \frac{1}{3} (1 + x^{-2})^{-3}.$$

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B106/B106

Calculation of the cross-section ...

calculated here assumes the simple form

$$\sigma = 4\pi a_0^2 Z^2 (v_0^2/cu)^{1/2} [1 + Z^{-1} - (u/v)^2 (\frac{1}{4} + Z^{-1})]. \quad (3)$$

for $u \gg 2Z^2 v_0$ and $v \gg u$. This form contains Bohr's formula, in which the screening of the nuclear Coulomb field of the medium is not considered. $\epsilon = 1$ for $vu > 2I_0/\mu$; $\epsilon \approx \mu vu/2I_0$ for $vu < 2I_0/\mu$. Z^* is the effective nuclear charge, Z is the atomic number, $v_0 = e^2/h$, v is the velocity of the free electron, μ its mass, I the binding energy of the electron in the ground state of the atom, $u = (2I/\mu)^{1/2}$, I is the binding energy of the lost electron, $a_0 = h^2/\mu e^2$. The screening will be the main factor determining the cross-section if the binding energy of the lost electron is low. In this case and for high velocities the free-collision results agree with those obtained in the Born approximation. There are 3 figures.

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S/056/63/044/C02/040/065
3108/3186

Calculation of the cross-section ...

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo
universiteta (Institute of Nuclear Physics of the Moscow
State University)

SUBMITTED: August 11, 1962

Card 3/3

ACCESSION NR: AP4043638

6/0056/64/047/002/0615/0623

AUTHORS: Dmitriyev, I. S.; Nikolayev, V. S.

TITLE: Semiempirical method of calculating the equilibrium charge distribution in a beam of fast ions

SOURCE: Zh. eksper. i teor. fiz., v. 47, no. 2, 1964, 615-623

TOPIC TAGS: charged particle distribution, ion beam, capture cross section, fast particle, equilibrium condition, Gauss equation, statistical physics

ABSTRACT: In view of the great difficulties in a consistent theoretical derivation of the equilibrium charged state of ion beams from the cross sections for the loss and capture of electrons, owing to the difficulty in the calculation of the cross sections, the authors propose a simple semiempirical method, which permits calculation of the average charges and the equilibrium charge distribu-

Card 1/3

ACCESSION NR: AP4043638

tion of fast ions moving in solid and gaseous media. The method is based on established laws governing the equilibrium distribution of the charges and makes use of concrete experimental data. The relative number of ions in the beam with different charges is assumed, in accordance with the experimental results, to depend on two parameters and to be given by a Gaussian curve. In calculating the average charge and the width of the equilibrium distribution, the generalized Bohr criterion is used in conjunction with the statistical model of the ion. The method can be applied to calculate the charge composition of a beam of ions of arbitrary elements with atomic numbers $Z > 2$ at an ion velocity $v > v_0 = e^2/h = 2.19 \times 10^8$ cm/sec. Data for ions of boron, neon, chlorine, argon, and mercury show agreement with the theory within 5--10%. Orig. art. has: 7 figures and 11 formulas.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

Cord 2/3

Author: A.M. Vasil'ev

Date: 1957-04-04/062011614

Title: APM 1957

4455

Author: Nikolayev, V. S. Vasilev

Abstract: The author discusses the numerical computation of the method of expansion into power series on digital computers.

The author's article was published in the journal "Computing methods in numerical mathematics" (Computing methods in mathematics), v. 3, no. 4, 1957, pp. 103-114.

Subject: Differential equations, numerical methods, power series

ABSTRACT: The author treats the problem of numerical computation of functions from their power series expansions on a digital computer, with special emphasis on linear differential equations of the first order. With his method, it is possible to calculate the solution of such equations to any required accuracy. The author used computers of the type M-20, which have a floating-point system and can manipulate numbers in scientific notation. The author's article was published in the journal "Computing methods in mathematics" (Computing methods in mathematics), v. 3, no. 4, 1957, pp. 103-114. The author expresses his thanks to N. D. Krasovskiy for his valuable guidance and the writing of the original program for concrete problems. The art. has 1 figure.

ASSOCIATION: none

Cont 1/2

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REF ID: A4

2/2

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001137120003-3"

b 5 b7c 64 CDT(1)/EPA(w)-2/DNA(s)-2
ACCESSION NR: AP5021115

IJI (c) AT

UR/0056/65/049/002/0500/0514

AUTHOR: Dmitriyev, I. S.; Zhileykin, Ya. M.; Nikolayev, V. S.

TITLE: Calculation of the effective cross section for the loss of electrons by fast hydrogen-like ions during encounters with hydrogen and helium atoms

SOURCE: Zhurnal eksperimental'noi teoreticheskoy fiziki, v. 49, no. 2, 1965,
500-514

TOPIC TAGS: helium, electron loss, ion interaction, electron interaction

ABSTRACT: Approximate formulas in a form convenient for practical calculations are derived for the cross sections of K-electron loss by any element in encounters with hydrogen or helium atoms. Earlier calculations by the authors (ZETF v. 44, 660, 1963) in the free-collision approximation did not yield a sufficiently complete and correct picture of the effect of variation of the colliding-particle velocity or of charge on the cross sections. The nonrelativistic Born approximation is used in the present article, and the energy and velocity ranges in which this approximation is valid are determined. The relative contributions of elastic and inelastic interactions are compared. For low-charge ions the approximation yields cross sections identical with those calculated in the free-collision approximation. In other cases the calculated cross sections are somewhat higher than the experimental ones.

Card 1/2

0701110

FORM 1
APR 1962 EDITION
GSA GEN. REG. NO. 27-1700

NAME: Nikolayev, V. G.

TITLE: Capture and loss of electrons by fast ions in atomic collisions

ADDRESS: Uspenski fizicheskikh nauk, v. 85, no. 4, 1985, USSR, Leningrad

KEY WORDS: ion beam, atomic collision, fast ion, electron loss, electron capture, ionization reaction, charge exchange

ABSTRACT: This is a review article devoted to a systematization of the extensive experimental material obtained in recent years on the processes of capture and loss of electrons by atomic nuclei and atoms. A brief account is given of the methods used. The data are included in the equilibrium approximation, which is discussed, and a summary is presented of work on stripping and charge exchange of fast ions and atoms at velocities exceeding $c = 0.1c$, etc. The subject is divided into three parts: I. Mathematical introduction; I.I. Main relations for the determination of the charge composition of an ion beam passing through matter; I.II. Determination of the charge composition of an ion beam passing through matter; II. Application of the method of determining the charge composition of an ion beam passing through matter to the study of atomic and nuclear processes.

Page 65

ACCESSION NO.: AP5011293

ion beam as the density of the medium is increased. II. Experimental procedure.

Molecular-spectroscopic method for determining effective cross sections. 2.2. Definition of average scattering cross section. The definition of the average scattering cross section is a basic problem in the theory of molecular scattering. In the present paper we shall use the following definition of the average scattering cross section. Let us consider a system of particles with the same mass m and the same initial velocity v_0 . We shall assume that the particles are scattered by a potential $V(r)$, which is independent of the angle of scattering. The differential cross section $d\sigma/d\Omega$ is defined as the ratio of the number of particles scattered per unit solid angle to the total number of particles scattered. The average scattering cross section $\bar{\sigma}$ is defined as the ratio of the total number of particles scattered to the total number of particles scattered per unit solid angle. The average scattering cross section $\bar{\sigma}$ is given by the formula:

¹⁰ See also the discussion of equilibrium distributions in Section 3.2.

5.3. Interpretation of singularities in the equilibrium charge composition of ion beams in dense media. 5.4. Methods of calculating the average ion charge. Crit. art. has: 26 figures, 50 formulas, and 1 table.

ASSOCIATIONS: None

卷之三

五五三一 66

SUB COMMITTEE

ମୁଦ୍ରା ପିଲା କଟାଇବା ହେଲା

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- Card 2/24/1981 P

APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R001137120003-3"

L 501-105 ERD(1) AUE(1) AI
ACC NRI AP6018803

SOURCE CODE: UR/0056/66/050/1252/1259

11
12
13

AUTHOR: Dmitriev, I. S.; Nikolayev, V. S.; Teplova, Ya. A.;
Popov, B. M.; Vinogradova, L. I.

ORG: Institute of Nuclear Physics, Moscow State University (Institut
yadernoy fiziki Moskovskogo gosudarstvennogo universiteta)

TITLE: Experimental investigation of the effective cross sections
for destruction and formation of fast negative ions in atomic collisions

SOURCE: Zh eksper i teor fiz, v. 50, no. 5, 1966, 1252-1259

TOPIC TAGS: capture cross section, negative ion, cyclotron, electron
loss, atomic ~~structure~~ structure

ABSTRACT: The effective cross sections of loss of one, two, or three
electrons in helium, nitrogen, or argon have been measured for negative
carbon, nitrogen, and oxygen ions produced as a result of a charge
exchange of positive ions accelerated in a 72-cm cyclotron to a velocity
of $\gamma=2.6 \times 10^8$ cm/sec. The cross section of simultaneous loss of two

Card 1/2

VACHAGIN, K.D.; NIKOLAEV, V.S.

Motion of streams of viscous fluids over the surface of a rapidly rotating flat disk. Izv.vys.ucheb.zav.; khim.i khim.tekh. 3 no.6:
1097-1102 '60. (MIRA 14:4)

1. Kazanskiy khimiko-tehnologicheskiy institut imeni S.M.Kirova,
kafedra mashin i apparatov khimicheskikh zavodov.
(Fluid dynamics)

21126
S/153/51/004/001/009/009
B110/B203

26. 2141

AUTHORS: Vachagin, K.D., Nikolayev, V.S.

TITLE: Character of liquid flow round the edges of quickly rotating disks

PERIODICAL: Izvestiya vysashikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, v. 4, no. 1, 1961, 148 - 150

TEXT: Centrifugal sprinkling apparatus w/ rotating attachments, whose shapes (conical or cylindrical dishes, flat disks, etc.) differently influence the course of reaction, are being used in chemical technology to an ever increasing extent. To attain the most favorable energy input unit of the final product and the optimum rate of the process, it is necessary to study the character of flow round the edges of quickly rotating disks. Cylindrical disks with four different edges (Fig. 1) were tested. The liquid keeps on flowing round the disk for a distance h, and then breaks off below the edges. The liquids indicated in the table were used to determine h. The angular velocities of the disks varied between $\omega=41.9-104.9 \text{ sec}^{-1}$; the consumptions per seconds: $Q=9.8-30.5 \text{ cm}^3/\text{sec}$

X

Card 1/5

21126

8/153/61/004/001/009/009
B110/B201

X

Character of liquid flow ...

the disk diameters: $D = 25 - 100 \text{ mm}$; the boundary angles: $\alpha = 0.0 - 1.573$ radians, the radii of curvature of the edges: $R_3 = 0.0 - 8 \text{ mm}$. The flow-round lengths h_f were measured on the photographs, and then converted to the real h values. The test results show that the quantity h decreases with increasing angular velocity ω , disk diameter D , viscosity η , and surface tension σ . h also drops with decreasing liquid supply Q , radius of curvature R_3 , boundary angle α , and specific gravity γ . For $\eta\omega/\rho v = 124.0 - 639.5$; $Q/Dv = 87.84 - 741.4$; $\alpha/\pi D^2 = 84.84 - 2854.1$; $(1 + R_3/D) = 1.0 - 1.16$ and $(1 + \alpha) = 1.0 - 4.14$, the experimental h values can be sufficiently described by the following equation:

$$h/D = 0.0175 \cdot (Q/Dv)^{1.56} \cdot (\eta\omega/\rho v)^{-1.28} \cdot (\alpha/\pi D^2)^{0.85} \cdot (1+R_3/D)^{0.50} \cdot (1+\alpha)^{0.40}$$

h can be calculated by this formula if $Q, \eta, D, R_3, \omega, \sigma, \gamma, \alpha$ are given. There are 3 figures and 7 references: 6 Soviet-bloc and 1 non-Soviet-bloc.

Card 2/5

S/153/61/004/001/009/009
B110/B203

Character of liquid flow ...

ASSOCIATION: Kazanskiy khimiko-tehnologicheskiy institut im. S.M. Kirova Kafedra mekhanicheskogo oborudovaniya khim. zavodov (Kazan' Institute of Chemical Technology imeni S.M. Kirov, Department of Mechanical Equipment of Chemical Plants)

SUBMITTED: January 19, 1959

Card 3/5

S/153/61/004/001/009/009
B110/B203

Character of liquid flow ...

1 Наименование жидкости	2 Кинематическая вязкость $\nu \cdot 10^4$, см ² /сек	3 Поверхностное натяжение $\sigma \cdot 10^4$, кг/м	4 Удельный вес γ , кг/м ³
5 Вода	12,37	75,3	999,5
6 Водоглицериновые смеси:	№ 1 № 2 № 3	21,51 14,71 10,79	1010,0 1020,0 1010,0

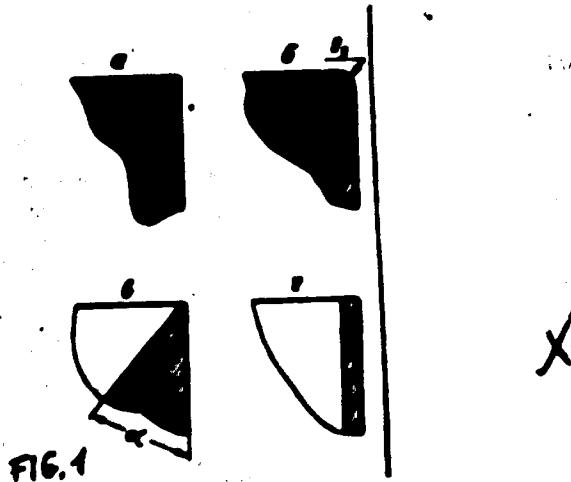
Legend to the table: Physical parameters of the liquids investigated.
(1) Designation of liquid, (2) kinematic viscosity, (3) surface tension, (4) specific gravity, (5) water, (6) water - glycerin mixtures.

Card 4/5

8/155/61/004/001/009/009
B110/B203

Character of liquid flow ...

Legend to Fig. 1: Types of edges: (a) rectangular edge without curvature, (b) rectangular edge with curvature, (c) acute-angled edge, (d) edge of a cylindrical dish.



Card 5/5

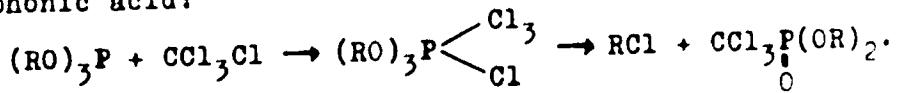
S/079/61/031/007/001/102
D229/D305

AUTHORS: Nikolayeva, A.D., and Nikolayev, V.S.

TITLE: Gil'm Khayrevich Kamay

PERIODICAL: Zhurnal obshchey khimii, v. 31, no. 7, 1961,
2085 - 2089

TEXT: This is a report on the work of G. Kamay, who synthesized a large number of organic compounds containing phosphorus and arsenic and examined their properties. His second work was to separate unsaturated asymmetric alcohols into their optically active components. The first compound which he succeeded in separating into the optical isomers was ethyl vinyl carbinol. Together with L.P. Yegorova he determined that carbon tetrachloride reacted with alkyl esters of phosphorous acid to form alkyl chloride and trichloromethylphosphonic acid:



Card 1/4

Gil'm Khayrevich Kamay

3/079/61/031/007/001/
D229/D305

Together with F.M. Kharrasova (Ref. 5: ZhOKh, 27, 949, 1957) he established a method of preparing esters of trichloromethylphosphonic acid from alcohols, phosphorus trichloride and carbon tetrachloride using triethylamine as hydrogen halide carrier -- for binding hydrogen halide, evolving during the reaction. Kamay further worked out a synthesis of unsaturated esters of phosphorus containing acids and discovered diallylphosphorous acid and few analogues of triallylphosphite. With V.A. Kukhtin (Ref. 9: ZhOKh, 27, 2372, 2376, 1957, and 28, 939, 1958) he found that the additional reaction of trialkylphosphites with unsaturated acids took place to form phosphonium carboxylic acids. This reaction was applicable to unsaturated aldehydes and anhydrides of unsaturated acids. Kamay also separated a series of asymmetric phosphonium compounds of the type $R\ R' R'' R'''P Br$ and proved that in phosphonium salts with an optically active anion, the cation could be optically active. Kamay established new methods of synthesizing organic arsenic compounds, one of them being the synthesis of arsenic ethers by the interaction of alcohols with halogenoarsines in the presence of organic bases in anhy-

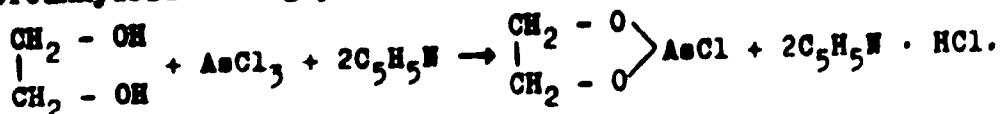
Card 2/4

S/079/61/031/007/001/008
D229/D305

Gil'm Khayrevich Kamay

drous ether: $\text{AsHal} + \text{HOR} + \text{B} \rightarrow \text{AsOR} + \text{B} \cdot \text{HHal}$.

This method was very useful for the formation of the so-called chloroanhydrides of glycolarsenious acids:



The above mentioned chloroanhydrides was found to react with dialkylamines to form amides of the cyclic esters of arsenious acid. Kamay studied properties of arsenic organic compounds and found that ethers containing arsenic could be re-etherified with alcohols and trialkyloxystibines; he also discovered the decomposition of amide-esters and thioesters by alkyl halides, and noted the tendency of allyl esters to polymerization and copolymerization. Kamay proved in addition that esters of arsenious acid in contrast to those of phosphorous acid, did not polymerize with the formation

Card 3/4

NIKOLAEVA, A.D.; NIKOLAEV, V.S.

Gil'm Khairevich Kamai; on his sixtieth birthday. Trudy KHMFI
no.30:3-10 '62. (MIRA 16:10)

KAMAY,G.Kh.; NIKOLAEVA, A.D.; NIKOLAEV, V.S.; KARIMOV, R.G.

Synthesis of α -chloro- γ -nitroisopropyl alcohol from allyl chloride.
Trudy KKHTI no.30:120-124 '62. (MIRA 16:10)

KAMAY, G.Kh.; NIKOLAYEVA, A.D.; NIKOLAEV, V.S.; SIDOROV, A.

Synthesis of -nitrocrotonyl alcohol. Trudy KKHTI no.30:
125-127 '62. (MIRA 16:10)

NIKOLAEV, V.S. (Moskva)

Hypersonic viscous flow about a slender cone. Inzh.shur. 2
no.3:9-13 '62. (MIRA 15:8)
(Aerodynamics, Hypersonic)

NIEGOLEV, V.G. Moscow

Viscous hypersonic flow behind a conical axisymmetric shock
- ve. Izv. AN SSSR Tekhn. i mekhanich. nauk 1964, N-1 '64.
(ZIRP 18:2)

A 20 - AFM - 104

Author: Khudyakova, N. V., Makarov, V. V., Khudyakova, A. S. Makarov,
Khudyakova, S. N. (Makarov, Nikolayevich), et al.

Title: Hypersonic viscous gas flow past sharp-edged cones,

Source: Inzhenernyy zhurnal, v. 5, no. 3, 1965, 616-626

Topic Note: Hypersonic flow, hypersonic viscous flow, hypersonic flow past cones,
hypersonic similitude, real gas effect, drag, friction drag, boundary layer,
hypersonic interaction parameter, boundary layer interaction

Abstract: Hypersonic, viscous gas flow past slender-sharp-edged, thermally-insulated cones at arbitrary angles of attack are investigated. On the basis of a new of viscous hypersonic similitude, expressions are derived for the form of the skin-friction coefficient and for the boundary-layer thickness as a function of the angle of flow. Two limiting cases are considered, namely, when the relative thickness of the boundary layer is small and when it is large enough to be compared with the wave length of the free-stream velocity fluctuations. The results

Card 1/3 AFM - 104

The dependence of the angle of attack on the angle of intersection of the flow direction with the chord of the airfoil was investigated at the same time. The results were recorded by the methods described above, and the values of the angle of attack sufficient to obtain an angle of the intersection of the parameter of 0.75, plane, boundaries of hyperbolic cones to hypersonic flow in free flight with respect to the wind drag were investigated at various fixed values of one of the geometric parameters, such as length, surface area, thickness, etc. At small angles of attack, when at large angles of attack, were also determined and experimentally investigated at the following values of the hypersonic interaction parameter: $\lambda_0 = 2.5, 4.5$, and 6.7 . An analysis of the results shows that viscosity effects are substantial only at small angles of attack in the range of interaction parameter considered here, and that when the angle of attack is increased, the ratio of the total forces applied to the body in hypersonic flow coincide with those obtained from using the theory of ideal flows. Only at $\lambda_0 = 5$ differences are observed.

143

ASSOCIATION: none

Card 273

NIKOLAEV, V.S.

Determining the degree of fire and explosion hazard in chemical plants and standards for the design of sections where danger of explosion exists. Khim.prom. no.5:302-306 Jl-4g '57. (MIRA 10:12)
(Chemical plants--Safety measures)

NIKOLAEV, V. S.

Determination of the boundaries of permanently frozen ground
based on materials of field geophysical studies. Trudy Inst.
geofiz. AN SSSR 19:108-112 '62. (NICA 16:1)

(West Siberian Plain—Frozen ground)

NIKITYAEV, V.S.

"Some Questions of the Cultivation of Corn in the Conditions of
Belgorodskaya Oblast";

Dissertation for the degree of Candidate of Agricultural Sciences
(awarded by the Timiryazev Agricultural Academy, 1962)

(Investiya Timiryazevskoy Sel'skokhozyaistvennoy Akademii, Moscow, No. 2,
1963, pp. 232-236)

1965-1966 - 1966-1967 - 1967-1968 - 1968-1969 - 1969-1970 - 1970-1971

AUTHOR: Vamberskiy, M. V. (Active member); Nikozov, V. S. (Active member)

Effect of waveguide-wall distance on the speed of operation of SHF ferrite

SOURCE: Radiotekhnika, v. 19, no. 9, 1964, 24-31

OPT TACO: ferrite device, ferrite switch, ferrite filter - A/F communication, A/F controller device 9%

ABSTRACT: A theoretical and experimental investigation of the shielding effect of a wall of a waveguide on ultrashort pulses of $\lambda = 1 \mu$ is reported. Formulas are developed for the complex shielding factor of a rectangular or circular waveguide. Theoretical spectra of internal and external fields are plotted for 1- and 10-micron square pulses propagating in a 72×34 -mm copper waveguide; the field distortion is very considerable even for wall thicknesses as low as 0.01 mm.

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L 14190-6
ACCESSION NR: AP4045469

particularly for the shorter pulse. Formulas are developed for the inside-the-waveguide spectra of square and sawtooth pulses. The attending effect was also numerically simulated for a rectangular pulse. In addition, the effect of a rectangular pulse on the field distribution in a waveguide having a dielectric layer was set up by a pulse-excitation source applied over one boundary. Experiments were carried out on a waveguide brought about a strong field distortion in particular, namely, severe distortion of the pulse. The effect was numerically simulated for a rectangular pulse with the slot length $\lambda_0/2$ and the width $\lambda_0/2$. The results are given in the following article and figures and 12 formulas.

ASSOCIATION: Nauchno-tehnicheskoye obshchestvo radiotekhniki i elektronika
of the Academy of Technical Sciences, Moscow Engineering and Physical Institute (MEI)

SUBMITTED: 05Apr63

ENCL: 06

SUB CODE: EC

NO REF Sov: 601

OTHER: 003

Card 2/2

NIKOLAEV, V.I., neftianik

Establish experimental stations at petroleum refineries.
Neftianik 6 no.12:13 D '61. (MIRA 14-12)

1. Kuybyshevskiy naftopererabatyvayushchego zavod.
(Petroleum refinery - Technological innovations)

NIKOLAYEV, V.V.

Calculation of dislocation break-up in the internal friction theory. Fiz. met. i metalloved. 18 no.6:801-805 1974.
(MIRA 18:3)

1. Institut fiziki metallov AN SSSR.

NIKOLAEV, V.V.

Scientific and technological conference on rural electric power
distribution. Elektrotehnika 36 no.1:62 Ja '65.

(MIRA 18:3)

11(0)

sov/93-58-10-13/19

AUTHOR: Nikolayev, V.V., Bushchenko, Ye.G., Yufin, V.A., and Yakunin, V.V.

TITLE: Radioactive Densimeter for Gravity Control on Pipelines Simultaneously Carrying Various Batches of Petroleum Products (Radioaktivnyy plotnomer dlya izmereniya plotnosti nefteproduktov v truboprovodakh pri posledovatel'noy perekachke)

PERIODICAL: Neftyanoye khozyaystvo, 1958, Nr 10, pp 58-62 (USSR)

ABSTRACT: Radioactive densimeters for measuring the gravity of the various petroleum products simultaneously carried by pipelines have already been designed in the United States [Ref 1] and in the Soviet Union. The GP-1 densimeter, designed by the VNIINP Institute and described in the literature [Ref 2], had a number of defects which were eliminated in the PZhR-2 densimeter (Fig. 1) designed by the NII Teploprapor. The PZhR-2 Model consists of a radioactive source mounted on a disc and rotated by a synchronous motor. The gamma rays from the source alternately pass through the test fluid and the compensating wedge and hit a scintillation counter. The electric impulses emerging in the counter are summed up on the integration cell from which a sinusoidal signal of unbalance is obtained. The signal of unbalance is amplified by an amplifier and with the aid of a phase-sensitive

Card 1/2

Nikolayev, V. V.

57-2-31/32

AUTHORS: Mikheyev, N. I., Nikolayev, V. V.

TITLE: On a Certain Regularity in Laminar Flows of a Viscous Incompressible Liquid in Narrow Slits Formed by Smooth Mobile Surfaces (Ob odnoy zakonomernosti dlya laminarnykh techeniy vyazkoy neszhimayemoy zhidkosti v uzkikh shchelyakh, образованных гладкими подвижными поверхностями)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 2, pp.422-432
(USSR)

ABSTRACT: A laminar flow of a viscous, incompressible liquid in a narrow slot formed by smooth and mobile surfaces of any shape is assumed. One of the walls of the slit B or both walls C and D rotate with constant angular velocities (ω_1 , ω_2 and ω_3) around any axes, O₁, O₂ and O₃, or perform periodic oscillations with regard to these axes. The equations (9) $Eu = \Psi_1(Re)$ (Re - Reynold's number and Eu - Euler's number) and equation (9)' $\frac{qT}{\tau} = \Psi(\frac{\tau}{T})$ are derived. q is the leakage in the slit per unit of time. T is the interval of the sur-

Card 1/3

57-2-31/32

On a Certain Regularity in Laminar Flows of a Viscous Incompressible Liquid
in Narrow Slits Formed by Smooth Mobile Surfaces

of the investigated flow-meters. Thus it is possible to take
into account this error with an accuracy of up to 0,1 %.
There are 4 figures, and 3 references, all of which are Slavic.

SUBMITTED: August 5, 1957

AVAILABLE: Library of Congress

1. Laminar flow-Mathematical analysis

Card 3/3

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001137120003-3

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001137120003-3"

NIKOLAEV, Viktor Vladimirovich; POLYAKOVA, N., red.; KLIMOVA, T..
tekhn. red.

[Toward the shortest working day in the world] K nacionn. koretkomu
rabochemu dniu v svete. Moskva, Gos.izd-vo polit.lit-ry, 1960.
31 p.

(Hours of labor)

MAKOV, A.V.; RISIN, V.I., inzh.; DEM'YANOV, Ye.S., inzh.; NIKOLAYEV, V.V., inzh.

Exchange of practices among enterprises of the economic councils.
Tserf. prom. 39 no.8:25-27 '62. (MIRA 16:1)

1. Kalininckoye oblastnoye upravleniya mestnoy promyshlennosti (for Makov).
2. Torfopredpriatiye "Radovitskiy mokh" (for Rysin).
3. Torfopredpriatiye "Vorgash" (for Dem'yanov).
4. Varegovskoye torfopredpriatiye Yaroslavskogo soveta narodnogo khodzayastva (for Nikolayev).

(Peat machinery)

Nikolayev, U.S.

APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R001137120003-3"

MARYEVA, Yu.K.; NIKOLAEV, V.V.

Harmonic analysis of tidal variations in the force of gravity
by R. Lekolaze's method using an electronic computer. Trudy
Inst. geol. i geofiz. Sib. otd. AN SSSR no.21:102-121 '63.
(VTPR 17:11)

NIMOLAYEV, V.V.

Effect of the inlet system on the indices of a carburetor
engine in starting. Avt. prom. 30 no.9-7-9 S '64.

(MIRA 17:10)

1. Tsentral'nyy ordena Trudovogo Krasnogo Znameni nauchno-
issledovatel'skiy avtomobil'nyy i avtomotornyy institut.

NEDLAINV, V.V.

Automatic feed roller built in a die stamping machine. Avt. 1 tract.
prot. no.2:42-44 P '56. (MERA 9:6)

1. Moscowkly etched name Stalin.
(Dies (Metalworking))

PHASE I BOOK EXPLOITATION

SOV/4813

Nikolayev, Viktor Vasil'yevich, and Boris Vasil'yevich Sorokin

Projektirovaniye profilirovochnykh rolikov; opyt avtozavoda im. I.A. Likhacheva
(Design of Rolls for Cold-Roll-Forming; Experience of the Likhachev Automobile
Plant) Moscow, 1959. 42 p. (Series: Moskovskiy dom nauchno-tehnicheskoy
propagandy. Peredovoy opyt proizvodstva. Ser.: Progressivnaya tekhnologiya
mashinostroyeniya, vyp. 10) 5,000 copies printed.

Sponsoring Agencies: Obshchestvo po rasprostraneniyu politicheskikh i nauchnykh
znaniy RSFSR; Moskovskiy dom nauchno-tehnicheskoy propagandy imeni F.F.
Dzerzhinskogo.

Ed.: N.I. Tyurin; Resp. Reviewer for this book: R.R. Yustus; Tech. Ed.: R.A.
Sukhareva.

PURPOSE: This booklet is intended for designers and operators of cold-roll-forming
machines.

COVERAGE: The authors discuss the sections adapted to the cold-roll-forming pro-
cess. They describe the machines and the stock used and discuss the principles
and steps to be taken in designing the sets of forming rolls, auxiliary rolls,
Carry 17/3

L 00634-67 EWT(1)

ACC NR: AP6005309

SOURCE CODE: UR/0413/66/000/001/0044/0022-1

37

G

AUTHOR: Nikolayev, V. V.

ORG: none

TITLE: A device for decoupling two waveguide channels. Class 21, No. 177489

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 1, 1966, 44

TOPIC TAGS: waveguide, waveguide coupler, waveguide element, phase shifter

ABSTRACT: This Author Certificate presents a device for decoupling two waveguide channels, made in the form of a double T-junction. This design improves the decoupling between the channels. An auxiliary waveguide is connected with the lateral waveguides of the double T-junction by two coupling elements (see Fig. 1). A variable attenuator and a variable phase shifter are located in one cross section inside the auxiliary waveguide.

Card 1/2

UDC: 621.372.832.6

BULGAKOV, B.A.; ~~NIKOLAEV, V.V.~~; SOKOLOV, D.A.; GOLOVIN, G., red.;
PETERSON, A., ~~Tekhn.~~ red.

[Repair and reconstruction of ways in the city of Riga]
Vosstanovlenie i rekonstruktsiya rizhskikh gorskikh na-
bereskaykh. Riga, Izd-vo AN Latv.SSR, 1952. 109 p.
(MIRA 16:6)

(Riga—Wharves)

NIKOLAEV, V.V.,kand.tekhn.nauk, dots.

Planning and building large-block plain and reinforced concrete foundations in Rostov Province. Trudy RISI no.4:36-43 '55.
(NIMA 12:1)
(Rostov Province--Foundations) (Concrete blocks)

NIKOLAEV, V.V., kandidat tekhnicheskikh nauk.

Limitation of ratio values of edge stresses in calculating stiff foundations. Serov. prom. 35 no.5:35-37 My '57. (MLB 10:6)

1. Rostovskiy inzhenerno-stroitel'nyy institut.
(Foundations) (Strains and stresses)

NIKOLAEV, V.V., docent, kand. tekhn. nauk

Determining the deflection angle of rigid rectangular foundations.
Trudy RISI no.6:7-21 '58. (MIRA 12:6)
(Foundations)

L 22772-66
ACC NR: AF0015200

SOURCE CODE: UR/0292/65/000/001/0062/0062

45
B

AUTHOR: Nikolayev, V. V.

ORG: none

TITLE: Makh conference on electric power supply in agriculture

SOURCE: Elektrotehnika, no. 1, 1965, 62

TOPIC TAGS: electric engineering conference, electric power production, electric motor, electric power transmission, agriculture

ABSTRACT: This conference, organized by all-Union and Azerbaiydzhan authorities, was attended by representatives of 150 of the nation's power and electrification organizations. Papers were presented on the following subjects: problems of agricultural electrification in the USSR; principal trends and prospects of agricultural electrification in Azerbaijan as well as in the entire USSR; design and production of rural power supply facilities; uses of electric power in agriculture. The statistics presented show that, toward the end of 1964, electric power was enjoyed by 99% of sovkhozes and 88% of kolkhozes. More than 1.3 million electric motors operated in agriculture. The total extent of high- and low-voltage lines exceeded 1,300,000 km. The power consumption by agriculture in 1963 increased six times compared with 1953 and reached approximately 17 billion kWh. The subjects of the communications presented at the conference included: power distribution systems in agriculture; experience in designing rural power

Card 1/2

2

I 23772-66
ACC NR. AP6015200

supply installations; use of railroad-traction substations to supply power to agriculture; repair of rural transmission lines; power supply for irrigation and water development systems. The conference drafted a number of important recommendations for a radical improvement in rural power supply and in the quality and reliability thereof. [JPRS]

SUB CODE: 10, 02, 09 / SUBM DATE: none

Card 2/2

88

24.900

S/058/62/000/003/059/092
A061/A101

AUTHORS: Mednikov, Ye. P., Nikolayev, V. Yu.

TITLE: Mechanism of the destructive action of ultrasonics on the scale

PERIODICAL: Referativnyy zhurnal. Fizika, no. 3, 1962, 44, abstract 30354 (Sb.
"Primeneniye ul'traakust. k issled. veshchestva", no. 12, Moscow,
1960, 45-51)

TEXT: The cause of the destruction of the scale by ultrasonics is seen in
the difference between the velocities of bending waves of the wall and scale, and
in the low fatigue limit of the crystal bonds between the scale and wall, rather
than the difference between moduli of elasticity or between acoustic resistances
of the wall and scale.

[Abstracter's note: Complete translation]

JB

Card 1/1

"APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R001137120003-3

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001137120003-3"

[Transactions of the] Conference on the Occasion of the 40th Anniversary of the Nizhniy-Novgorod Radio Laboratory imeni V. I. Lenin, 22-24 May, at Gor'kiy (Gor'kiy, 13:8, 71-9, '58) 507/108-13-8-11/12

years. Ya. M. Sorin spoke about "The Way From the Oscillating Crystal Receiver to the Transistor". B. L. Lebedev gave a survey of the work in the field of radio measuring technique. L. L. Myasnikov spoke about the work of the scientists of Gor'kiy in the field of radiophysics. The scientific work in the "Scientific Research Institute of Radiophysics" re-organized in 1956 (NIRFI) concentrates on three main lines of development: radio astronomy, electronics, statistical radiophysics and radio spectroscopy. In October 1958 a conference on statistical radiophysics will be convened in Gor'kiy.- A. N. Malakhov spoke about the work of the radio-astronomical expedition of the NIRFI to Southern China. It was a Chinese-Soviet expedition in which also professors and collaborators of the Peking (Pekin) and Canton (Kanton) universities as well as of the Institute of Radio-Engineering and Electronics of the Academy of Sciences of China took part. Ya. N. Nikolayev spoke about "The Gor'kiy School of the Theory of Oscillations". D. V. Ageyev spoke about the theme "Subjects Investigated by the Scientific Collaborators of the Faculty of Radio Engineering of the Gor'kiy Polytechnical Institute". Ye. A. Popova-K'yandskaya spoke about the work carried out by A. S. Popov at Nizhniy-Novgorod.

Card 2/4

NIKOLAYEV, Ya.Yu.

← Regularities concerning the formation and dynamics of intra-
operational surpluses on semi-continuous and automatic lines.
Nauch.trudy NIIKI no.18:124-133 '61. (MIRA 15:2)
(Assembly-line methods)

NIKOLAEV, Ye.A., Inventor.

Programmed cutting of slate forming by metal cutting machine
tools. Inventor's certificate No. 22-02 A.S. '58.
(Machine tools) (Electronic control)

NIKOLAYEV, Ye.G.

A geometrical property of the roots of polynomials. Vest. Mosk. un. Ser.1: Mat., mekh. 20 no.5:23-26 S-0 '65. (MRB 10:2)

1. Katedra teorii funktsiy i funktsional'nogo analiza.
Moskovskogo universiteta.

NIKOLAYEV, Ye. I.

Combined uterine plethysmograph and its practical use. Akush.
i gin. no.4:40-43 '62. (MIRA 15:7)

1. Is kafedry akusherskogo i ginekologicheskogo chlen-korrespondent
ANR SSSR prof. K. M. Pigurnov (deceased)) Vojenno-meditsinskoy
ordenova Lenina akademii imeni S. M. Kirova.

(PLETHYSMOGRAPHY—EQUIPMENT AND SUPPLIES)
(UTERUS—BLOOD SUPPLY)

NIKOLAEV, Ye.I.; KRYAKOVSKIY, Yu.V.; TYURIN, Ye.I.; YAVOYSKIY, V.I.

Chemical heterogeneity and nonmetallic inclusions in ingots of steel
with rare-earth metals. Izv. vys. ucheb. snov.; chern. met. 8 no.7:37-
42 '65. (MIRA 16:7)

1. Moskovskiy institut stali splavov.

ZAKHARIKOV, N.A. (deceased), doktor tekhn.nauk; PIROV, I....,
kand.tekhn.nauk; PABICH, V.I., inzh.; TESSEL'SKIY, G.A.,
inzh.; NIKOLAYEV, Ye.I., inzh.; OBLIVEL'NYY, F.A., inzh.;
VAYNSHTEYN, A.L., inzh.; LUSHIN, L.A., inzh.

New device for the control of gas combustion in glass tank
furnaces. Stek. i ker.21 no.9:5-6 S 1974 (MIPR 1P:4)

1. Instytut gazu AN UkrSSR (for Zakharikov, Pirov, Pabich,
Tessel'skiy, Nikolayev. 2. Lisichanskiy stekol'nyy zavod
(for Oblivel'nyy, Vaynshteyn, Lushin).

NIKOLAYEV, Ye.I., inzh.; AYZINA, T.V., inzh.; RABIN, Ye.I., inzh.;
CHEVCHENKO, Ye.T., inzh.

Rapid glost firing of enameled glass tablets in gas kilns. Tech.
i ker. 22 no.9:38-39 S '65. (MPA 18:9)

I. Institut gaza AN UkrSSR (for Nikolayev). K. Steklofabr. na r. o
"Proletariy" (for Ayzina, Engver, Shevchenko).

KONONKO, V.P., inzh.; NIKOLAYEV, Ye.I., inzh.; OBLIVAL'NYY, F.A., inzh.;
VAYNIGSTEIN, A.L., inzh.

Improving the conditions for the production of sheet glass by
vertical drawing. Stek. i ker. 22 no.10:9-11 O '65.
(MIRA 18:12)

1. Institut gaza AN UkrSSR (for Kononko, Nikolayev).
2. Lisichanskiy stekol'nyy zavod (for Oblival'nyy, Vaynigstein).

30(1)

207/20-50-10-1/1:

AUTHOR: Ben'yaminovich, E.V., Vorotkov, P.A., Nikolayev, Ye.V.
and Rozentlat, V.F., Engineers

TITLE: The South Golodnaya Step' Canal

PERIODICAL: Gidrotekhnika i melioratsiya, 1959, "v 10, pp 3-16
(Russian)

ABSTRACT: The Golodnaya step' area of Uzbekistan and Kazakhstan contains 500,000 hectares of land suitable for irrigated cotton-growing. For this reason the area has been the subject of many development and reclamation projects, attracting the attention even of the Soviet hydraulic engineers G.K. Rizenkampf, F.P. Torgunenkov and V.F. Pulayevskiy. Several plans for the irrigation of the area have been drawn up; however, the final variant, approved by the CC of the CPSU and the Soviet ministrov SSSR (Council of Ministers of the USSR) on 14 June 1958, provided for irrigation of the Golodnaya step' by two canals - the existing North Canal

Card 1/3

The South Golodnaya Step' Canal

SCV/90-50-10-1/11

imeni Kirov and the South Golodnaya Step' Canal, still under construction. The water for these canals was to be drawn from the Farkhad Dam via the derivation canal of the Farkhadskaya GES (Farkhad "Hydroelectric Plant") with a throughput of 500 cu m/sec. The general layout of the system may be seen from Fig 1. The area covered by the North Canal contains about 250,000 hectares suitable for irrigation, of which some 180,000 hectares have now been reclaimed, while the South Golodnaya Step' Canal dominates an area containing 350,000 hectares of land suitable for irrigation. Of this about 40,000 hectares have so far been reclaimed. It is proposed to set up 31 cotton-growing sovkhozes and several horticultural sovkhozes in the new irrigation areas. About 50-55% of the total irrigated area will be under cotton and each new sovkhoz will cover around 8-10 thousand hectares. Watering will mainly be effected by pipelines in long furrows. Sprinkling will be used on farms in the South-West part of the Golodnaya step' where the ground is uneven and the soils have a comparatively high degree of permeability.

Card 2/3

NIKOLAYEV, Yu.M.; KAVICHENOV, Ye.I.

Manufacture of scintillation screens from zinc sulfide.
Prib. i tekhn.eksp. 10 no.5:231-232 S-O '65.

(VTPR 19:1)

1. Submitted September 8, 1964.

"APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R001137120003-3

Hilbertz, E. H., Graphical method for the determination
of the resultant vector of the inertial forces of a mecha-
nism. AGARD Naval Naval Treaty Series Techn. Memo. i
"Mechanisms 10, 10-14, 1961 (1961) (Russian)"

Approved for Release

by [Signature]

Mathematics

JP

APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R001137120003-3"

CHUMAKOV, V.P., kandidat tekhnicheskikh nauk, dozent; NIKOLAEV, Ye.N.,
prepodavatel'.

General classification of winding machine tools used in instrument
building. Trudy MATI no.27:72-92 '56. (MLRA 9:8)
(Electric instruments) (Machine tools)

BUKOVAYEV, Ya.E., prepodavatel'.; CHUMAKOV, V.P., kandidat tekhnicheskikh
nauk, dotsent.

Winding of small-sized rotors laying out the turns on slots. Trudy
MATI no.27:93-98 '96. (MLM 9:8)
(Electric machinery)

CHUMAEV, V.P., kandidat tekhnicheskikh nauk, dotsent; NIKOLAEV, Ye.N.,
prepodavatel'.

Machine tools for winding of rotors and stators with external slots.
Trudy MATI no.27 no.99-106 '56. (MLA 9:8)
(Machine tools)
(Electric machinery)

NIKOIAYEV, Ye. N. (Sr. Instructir) CHUMAKOV, V. P. (Cand. of Tech. Sci., Docent)

"Mechanized Winding of Small Rotors." in book Some Problems in the Modern Technology of Instrument Making, Moscow, Oborongiz, 1957. 126 p. Moscow. Aviationnyy tekhnologicheskiy institut.

In this article the authors discuss the development of new machine tools and techniques for winding small-sized rotors of electric motors widely used in aircraft instrumentation and automatic controls. The authors have developed a preliminary design and technical specifications for the construction of a machine tool for winding small-sized rotors, on the basis of which the Scientific Research Institute of Technology and Production Management in the Aircraft Industry has worked out the details and built a model of this machine. The model has been tested and successfully used in one of the plants of the Ministry of the Aircraft Industry. Schematic diagrams and detailed discussion of this machine tool is presented. The authors state that the new machine tool simplifies and facilitates the time-consuming manual winding operation. There are 3 Soviet references.

In their article, "Surface Hardening of High-Strength Cast Irons by Heating with High Frequency Current," M. N. Kuniavskiy, Candidate of Technical Sciences, T. G. Demidova, Candidate of Technical Sciences, and Engineer E. N. Nikolayev, Moscow Automotive Mechanics Institute and the Scientific Research Institute of Technology of the Motor Vehicle Industry (NIITAVTOFOM), present some results of studies of a new method of surface hardening of high-strength cast irons with ferrite and ferrite-perlite bases. The study was conducted on samples of high-strength cast iron with a diameter of 20 mm, containing 3.35% C, 2.64% Si, 0.77% Mn, 0.006% S, 0.09% P and 0.08% Mg. The test pieces under hardening were heated with the aid of a single-coil inductor in a tube generator (Type GE-46) with a frequency of 350 kilocycles. The temperature was controlled with an automatic photopyrometer (FP-3).

The study of the system of surface hardening was carried out at a heating speed of 60 and 170 degrees per second. (The speed of heating was measured up to the Curie point.) The heating temperature changed from 850° up to 1,175° in steps of 50°. In addition, a system of surface hardening at a speed of heating of 250 degrees per second from 1,100 to 1,150° was studied.

Results of the determination of surface hardness in relation to the temperature of hardening showed that up to 1,000°, regardless of the speed of heating, the speed of carbon diffusion from graphite inclusions was insignificant. In heating up to 1,000°, only the initial period of diffusion of the carbon was noted, and as a result of the hardening only the edges of the noncircular martensite around the graphite inclusions are fixed.

Surface hardening of perlitic cast iron with spheroidal graphite permits ensuring sufficiently high hardness (57-58 Rockwell scale "C") at a given depth in the usual hardening by heating with high frequency current.

Ferrite and ferrite-perlite cast irons with spheroidal graphite for obtaining high surface hardness with the retention of a tough and soft center must first be subjected to a special heat treatment ensuring the saturation of the gamma-phase carbon of the graphite inclusions in the surface layer only.

The proposed technology of saturation in the surface layer of gamma-phase carbon of graphite inclusions by means of single or repeated normalizing by heating with high frequency current, and of the subsequent hardening, guarantees high surface hardness with the retention of low hardness of the core.

Several graphs showing hardness distributions and some photomicrographs are included in the article. (Metallovedeniye i Obrabotka Metallov, No 3, Mar 97, pp 61-65) (S)

SUM 1374

137-58-2-1438

N/1.0.4/1.1.1.1/
Translation from: Referativnyy zhurnal Metallurgiya, 1958, Nr 2, p 166. (USSR)

AUTHORS: Demidova, T. G., Nikolayev, Ye. N., Kunyavskiy M. N.

TITLE: Preliminary Normalization of High-strength Irons by High-frequency Currents During Surface Hardening
(Predvaritel'naya normalizatsiya nagrevom TVCh
vysokoprochnykh chugunov pri poverkhnostnoy zakalke)

PERIODICAL: Tekhnol. avtomobilestroyeniya, 1957, Nr 4, pp 51-56

ABSTRACT: The effect of preliminary normalization (N) by high-frequency heating, followed by hardening (H) at a single setting, on the surface hardness of ferritic and ferritic-pearlitic irons (I) of the following chemical compositions (in percentage): C 3.35, Si 2.64, Mn 0.77, S 0.006, P 0.09, and Mg 0.08 was investigated. Specimens heated in a high-frequency inductor at a heating rate (R) of 170-180 and 250° C/sec to 1000 and 1150°, were again heated after the current was shut off and were then hardened in water. The following R_C values were obtained after the treatment: 1) for ferritic I: a) at V=170°/sec; 14 after N from 1000°, 18 from 1150°; 18 after double normalization (N) from 1000°; 20 from 1150°; 42 after DN+H from 1000°; 50 from 1050°, 31

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137-58-2-3438

Preliminary Normalization of High-Strength Irons (cont.)

after H from 1000°; 35 from 1150°; b) at V=250°/sec, 8 after N from 1000°, 11 from 1150°; after DN 12 from 1000°; 13 from 1150°; after DN+H 38 from 1000°; 48 from 1150°; after H 28 from 1000°; 32 from 1150°; 2) in ferritic-pearlitic I (V=180°/sec); 12-15 after N from 1130°; after N from 1130°+H 47 from 950°; after N from 1130°+H 56 from 1000°; after DN 22 from 1130°; after DN from 1130°+H 48-49 from 950°; after DN from 1130°+H 58 from 1000°; after H 45-46 from 950°; after H 52 from 1010°; and after H 56 from 1050°.

V. L

1. Iron--Hardening 2. Iron--Heat treatment

Card 2/2

NIKOLAEV, Ye.N., starshiy prepodavatel'; CHUMAKOV, V.P., kandidat
tehnicheskikh nauk, dotsent.

Mechanising the winding of small-size rotors. Trudy MATI
no.33:74-83 '57. (MIRA 10:10)
(Rotors)

SOV 137-59-1-1828

Translation from: Referativnyy zhurnal Metallurgiya , 350 Nr 1 p 242 (USSR)

AUTHOR: Nikolayev, Ye. N

TITLE: Hardening of Machine Parts With High-frequency Currents
(Zakalka detaley tokami vysokoy chastoty)

PERIODICAL: V sb. Materialy Soveshchaniya glavn. metallurgov z-dov i in-tov
avtomob. prom-sti Nr 3 Moscow, 1958, pp 87-94

ABSTRACT: A description is given of experience in the introduction of heat treatment of automobile parts using high-frequency (HF) current. From among the steels used for automobile parts which undergo heat treatment with HF current the following grades have attained extensive application: St-45 steel 60%, St-40 steel 12%, St-35 steel 8%, 40KH steel 7%, carburizable low-carbon steels 3.5%, carburizable alloyed steels 4.5%, other grades of steel and ferritic malleable iron 5%. The necessity is pointed out for a study of the effect of selection, depth of heat treatment and structure on the quality of surface-hardened machine parts, and of the creation of a base for centralized production of equipment and auxiliary apparatus for HF treatment of machine parts

A B

Card 1/1

NIKOLAEV, Ye.S.

Obtaining from oxen serum against swine erysipelas. Prudy Gos.sanuch.-
kont.inst.vet.prep. 4:425-426 '53. (MLRA 7:10)

1. Glavnyy veterinarnyy vrach Krasnodarskoy biofabriki.
(Erysipelas--Preventive inoculation) (Serum)

NIKOLAYEV, Yevgeniy Vladimirovich; BOYNOVICH, D.I., inzh.,
retsenzent; KUZNETSOV, V.V., inzh., retsenzent; OSINKIN,
Ya.M., nauchn. red.; KOMAROVA, N.K., red.

[Safety measures on shipyard sidings] Tekhnika bezopasnosti
na podvezdnykh putiakh sudostroitel'nykh predpriiatii. Le-
ningrad, Sudostroenie, 1965. 54 p. (MIRA 18:3)

NIKOLAEV, Yevgeniy Vladimirovich; KATEKOV, Pavel Pavlovich;
LOZENFLAHTS, V.S., inzh., rotsenzen; KUCHANOV, V.V.,
nauchn. red.; LIGOK, E.I., red.

[Work safety in the building of plastic vessels] Bezopas-
nost' truda v plastmassovoy sudostroenie. Leningrad, Su-
dostroenie, 1966. 25 p. (MIRA 18;2)